

Financial globalisation and monetary independence¹

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Abstract

Has financial globalisation compromised central banks' ability to manage domestic financial conditions? This paper summarises the results from our recent research, which tackles this question from the bond market perspective for both advanced and emerging market economies. Using an asset pricing framework, we isolate co-movements of bond return risk premia unrelated to economic fundamentals to identify spillovers driven by exogenous global shifts in risk preference or appetite. Based on co-movements in bond yields, the analysis reaches several conclusions that run counter to popular presumptions. In particular, emerging market economies appear less susceptible to external financial conditions than advanced economies.

JEL classification: E40, E43, E44, E50, E52, F30, F41, G15.

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1. Introduction

Increased financial globalisation has renewed the debate on monetary policy and frameworks in open economies. The rising sensitivity of domestic credit and asset prices to external influences has heightened concerns about central banks' ability to manage domestic financial conditions. Some even argue that without the imposition of capital controls, monetary autonomy is largely lost.

This paper examines this issue from a bond market perspective covering 10 advanced and 21 emerging market economies. We propose an organising principle that delineates external influences on domestic financial conditions along three dimensions. *Monetary autonomy* is the ability of central banks to achieve desired targets with their instruments, regardless of how those targets are set as well as the factors that may influence them. *Monetary dependence* is the extent to which the actual setting of policy, as well as monetary conditions more generally, are influenced by external financial developments. Finally, *financial contagion* represents changes in domestic financial conditions unrelated to domestic fundamentals, which may be driven by external shifts in risk appetites or investor preferences.

Absent clear distinctions along these dimensions, discussions of how greater financial integration affects policy have often become muddled. Some recent renditions of the classic Mundell-Fleming trilemma, for example, conflate the notions of monetary autonomy and monetary dependence. Under this view, "monetary autonomy" has sometimes been associated with the degree to which local interest rates vary with foreign ones. But this makes no distinction between the *ability* to set monetary policy independently and the *willingness* to do so. Observed interest rate co-movements say less about the ability of central banks to set rates independently than they do about how external developments enter their policy reaction functions, and the extent to which responding to such developments is deemed appropriate given local mandates.

At the same time, "monetary autonomy" under the trilemma has also been interpreted as the complete insulation of domestic financial conditions from external factors. Rey (2013) prominently argued that, even with flexible exchange rates, so that central banks can set interest rates independently, the trilemma breaks down because broader financial conditions are still affected by external influences. We argue that this is again an overly broad interpretation of monetary autonomy under the trilemma.

In Disyatat and Rungtaphakornkitkul (2015), we add to the literature that examines co-movements in global bond yields along two main dimensions. First, in contrast to the bulk of the literature that focuses exclusively on advanced economies, our sample encompasses most emerging market economies, where much of the focus on spillovers has been directed. Secondly, we make the critical distinction between *monetary dependence* and *financial contagion* as outlined above.

With trade and financial integration, it is inevitable that external developments will impinge on local economic and financial conditions. In this context, co-movements in yields, and asset prices more generally, are part and parcel of monetary dependence. From a policy perspective, however, whether co-movement in yields reflects reactions to common fundamentals and uncertainty about those fundamentals, or reactions to exogenous changes in risk appetite and preferences has vastly different implications. In the former, the bond market is acting simply as a

messenger about expected future economic developments whereas in the latter case, they are a conduit of exogenous financial shocks unrelated to domestic fundamentals. Such global financial contagion may warrant offsetting policy actions.

The starting point for our measure of global financial contagion is the bond return risk premium, namely the expected excess return from investing in a long-term bond over a short one (throughout the paper, “risk premium” and “term premium” will be used interchangeably in reference to such expected excess return). By looking at the bond risk premium, we purge the direct influence of the expected path of monetary policy on bond price movements. Thus any incidental co-movement in monetary policy across countries, which could result in correlated bond prices yet be fully consistent with individual monetary autonomy, is removed from our measure of global financial contagion.

Term premia may still be affected by fundamentals, not least monetary policy through the risk-taking channel. We therefore proceed to refine the term premia by controlling for these influences. In the final step, we then extract the common component from these “cleansed” term premia to obtain our measure of global financial contagion. This measure essentially captures co-movements in bond returns unrelated to the expected path of monetary policy and economic fundamentals. This is the component that arguably matters most for policy traction as it represents an external shock that interferes with the transmission mechanism. In reacting to it, policy may need to deviate from what would have been justified purely based on domestic fundamentals.

Our analysis yields some novel results. First, our estimate of global financial contagion contains significant information not present in other popular global risk appetite measures such as the VIX. We argue that our measure is a more accurate metric for gauging the extent of policy traction. Second, emerging market economies are much less susceptible to global financial contagion than are advanced economies, contrary to popular presumptions. Third, for all country groups, it is far from obvious that the sensitivity to global financial contagion has increased after the global financial crisis, despite oft-cited concerns about the spillover effects of quantitative easing policies. Fourth, the analysis confirms that the simple correlation of bond yields can be misleading, as it could be influenced by correlation in monetary policies and fundamentals. Finally, the results shed some light on the interactions of term premia and exchange rate movements and point to the prevalence of nominal shocks, such as portfolio rebalancing, in emerging economies but not so in advanced countries.

Overall, our analysis suggests that the impact of financial globalisation on domestic policy traction appears to be less severe than sometimes portrayed. In particular, the spillovers that directly impinge on policy are substantially lower than those indicated by statistical co-movements in bond yields. In addition to its importance in underpinning expected short rates, monetary policy exerts significant influence on term premia via the risk-taking channel. We conclude that the domestic credit cycle remains very much the domain of central banks and local financial regulators.

The paper is organised as follows. In Section 2, we discuss the conceptual distinction between monetary autonomy, monetary independence and financial contagion. Section 3 explains the empirical approach for isolating the influence of financial contagion and sets out the main results. The final section concludes.

2. Financial globalisation and monetary control

In a provocative paper, Rey (2013) argued that the emergence of a global financial cycle has meant that, for small open economies, “...independent monetary policies are possible if and only if the capital account is managed, directly or indirectly via macroprudential policies.” (Rey (2013), p 287) This view suggests that the conventional monetary “trilemma” has morphed into a “dilemma” between monetary autonomy on the one hand and capital mobility on the other. This is in stark contrast to Woodford (2010), who argued that central banks’ control over inflation has not diminished, and has in some respects been strengthened, by globalisation. Obstfeld (2015) and Kamin (2010) meanwhile take the middle road by acknowledging that spillovers complicate the task of monetary policy but that independent monetary policy remains feasible for financially open emerging economies with relatively flexible exchange rates.

At the same time, many studies such as Fratzscher (2012), Miranda-Agrippino and Rey (2014), Bruno and Shin (2013), and Cerutti et al (2014) highlight the important role for “push factors” such as the VIX in driving financial flows. This is collaborated by a growing literature documenting the presence of a global factor driving co-movement in bond yields and other asset prices across countries (eg Aizenman et al (2015), Diebold et al (2008), Bauer and de los Rios (2012), Abbritti et al (2013) and Jotikasthira et al (2015)). Taken at face value, this suggests that the traction that monetary policy has over domestic monetary conditions has diminished.

An important shortcoming of the extant literature, however, is the tendency to conflate different definitions of monetary independence. As a result, interpretations of empirical results and the policy implications drawn are often muddled. We therefore begin by establishing a clear distinction between three notions of external linkages.

First, we define *monetary autonomy* as central banks’ ability to achieve the desired targets of their instruments, whatever those instruments and targets may be. This is the narrow sense of policy autonomy that focuses only on the technical capability to attain a given target setting of the monetary instrument, abstracting from the reasons behind those targets. Second, *monetary dependence* is the extent to which the actual setting of policy, as well as monetary conditions more broadly, are influenced by external financial developments. Observed monetary conditions embed the trade-offs weighed by policymakers implicitly in their reaction functions in response to foreign shocks, as well as financial market reactions to those shocks. Finally, the third notion is *financial contagion*, identified as changes in domestic financial conditions driven by shifts in global risk appetites or preferences unrelated to domestic fundamentals.

2.1 Monetary autonomy versus monetary dependence: revisiting the trilemma

Discussions of monetary policy autonomy in the context of open economies have invariably been framed around the classic Mundell-Fleming trilemma, which states that countries can simultaneously attain no more than two objectives out of the possible combination among capital mobility, a fixed exchange rate, and an independent ability to set interest rates. The last of these has been treated as

synonymous with monetary policy autonomy. To assess the degree of autonomy, most existing studies seek to gauge the extent to which domestic interest rates are related to world/base-country interest rates (eg Frankel et al (2004), Obstfeld et al (2005), Bluedorn and Bowdler (2010), Klein and Shambaugh (2013), Obstfeld (2015), Edwards (2015) and Aizenman et al (2015)).

When it comes to assessing monetary policy traction, however, a focus on simple correlations of short-term or long-term interest rates may result in misleading inferences. At the most basic level, the approach makes no distinction between the *ability* to set monetary policy independently and the *willingness* to do so, given central banks' goals and mandates. Flexible exchange rates do give central banks the technical ability to set short-term interest rates at some arbitrary level. But the actual conduct of policy will be governed by central bank mandates and goals. Hence any inference based on observed *outcomes* of policy setting will embody *both* the technical ability to set short rates independently and the normative choice of a policy setting deemed appropriate for the domestic economy. The approach, in other words, conflates the notions of monetary autonomy and monetary dependence as defined above.

Another way to see the point is to consider that countries with flexible exchange rates might just as easily choose to peg interest rates to another country, entailing no less a degree of dependence on foreign monetary policy than a fixed exchange rate would. Conversely, countries that choose to peg exchange rates are able to vary their monetary stance by adjusting the peg or adopt frameworks that send monetary policy signals through future prospective paths of the exchange rate. The Monetary Authority of Singapore is the leading example of this latter approach.

The real issue posed by greater financial integration is not so much monetary autonomy but monetary dependence. The question is how much of this dependence arises naturally from common fundamentals among economically and financially integrated economies, and how much of it reflects exposure to unpredictable swings in global risk appetite and preferences, which will now be discussed.

2.2 Monetary dependence versus financial contagion

With trade and financial integration, co-movements in yields, and asset prices more generally, are part and parcel of monetary dependence. From a policy perspective, however, it is important to ascertain the underlying shocks driving such co-movements. These can be divided into two broad categories.

In the first category, co-movements in asset prices may result from the normal interdependence among market economies due to real and financial linkages. Such "fundamentals-based co-movement" can be due to common global factors, such as a major economic shift in advanced countries or commodity price shocks, that trigger capital flows and portfolio readjustments. Here, asset price adjustments reflect the natural outcome of markets internalising news about expected fundamentals. A priori, there may be no need for policy to counteract such movements as they reflect the normal working of markets. Indeed, a substantial part of the price adjustment already reflects anticipated policy reactions to changing fundamentals.

The second category of asset price co-movement is one that cannot necessarily be linked to changes in macroeconomic or other fundamentals but arises as a result of arbitrary changes in the behaviour of investors. Such *financial contagion* is often linked to shifts in investors' risk appetites and preferences and may be characterised

by herd behaviour or financial panic. Here, asset prices are acting as conduits of exogenous financial shocks unrelated to domestic fundamentals and, as such, may warrant offsetting policy actions.

Our focus is on applying this distinction to bond yields, where the role of monetary policy looms large. The strong co-movement in government bond yields has been well documented, especially among advanced economies since the late 1980s. An obvious explanation for this stylised fact is that economic activity and inflation co-move across countries, entailing short-term policy rates that move in tandem. Indeed, there is ample evidence in the literature that points to the existence of a world business cycle (eg Kose et al (2003)) as well as the influence of global factors on inflation (eg Borio and Filardo (2007) and Ciccarelli and Mojon (2010)).⁴ Clearly, we need to move beyond simple correlation in bond yields to get a handle on the contagion component.

Our underlying premise is that externally driven changes in domestic financial conditions unrelated to domestic economic developments may give rise to adverse policy trade-offs. These trade-offs arise because they may necessitate monetary policy actions that, given the pervasiveness of their impacts, result in undesirable outcomes or side-effects along other dimensions.⁵ From this perspective, “policy traction” refers to the degree to which domestic monetary conditions are influenced by global financial factors unrelated to current and expected future fundamentals. The greater the influence, the lower is the degree of traction and the more policy may need to offset these movements.

To be clear, fundamental-based changes in financial conditions are not always benign. Capital flows linked to fundamental developments can create real challenges. For example, capital flows to emerging markets tend to be procyclical, reinforcing booms and exacerbating downturns. Indeed, we find that term premia in emerging markets are substantially larger and much more volatile than those in advanced economies. This reflects both lower market liquidity as well as the greater prevalence of economic shocks in these countries. By analysing changes in term premia unrelated to fundamentals, we are focusing more narrowly on externally driven variations in financial conditions that are exogenous to the domestic economy.

3. Contagion in bond premia

Our starting point for measuring financial contagion is term premia in government bond yields. By abstracting from short-rate expectations, variations in bond yields related to anticipated fundamental economic developments are, to a large extent, controlled for. That said, term premia themselves may also be related to fundamentals

⁴ Henriksen et al (2013) show that interest rate co-movements are part of a more general pattern of greater synchronisation of nominal variables across countries than fluctuations in real activity, even at medium-term business-cycle frequencies. This can be rationalised as the outcome of expected monetary policy reaction to anticipated co-movements in real variables in response to positive productivity shock spillovers.

⁵ The analogy with exchange rate movements is useful here (Engel (2011)). As long as nominal exchange rate movements reflect changes in underlying resource costs across countries, there is no case for policy concern. Only when movements are not related to fundamentals and cause international prices to deviate from underlying relative costs do they pose a concern.

and hence external developments. To the extent that global macroeconomic risks are correlated with domestic ones, for example, it is natural to expect co-movements in risk premia. Indeed, Diebold et al (2008) and Jotikasthira et al (2015) document the importance of global factors in driving co-variation in risk compensation for long-term bonds across countries.

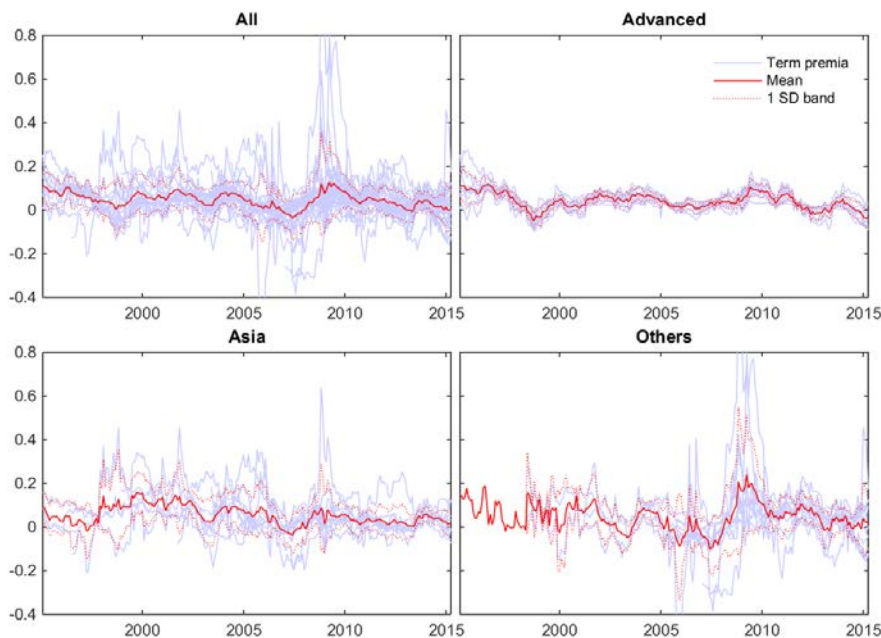
The empirical exercise covers 31 countries comprising 10 advanced economies, 10 emerging economies in Asia and 11 other emerging market economies. This rough division into three groups provides a convenient way to organise and interpret the empirical results. Data used are monthly zero-coupon yields from Bloomberg, and consensus forecasts of GDP and inflation obtained from Consensus Economics.

3.1 Empirical strategy

We adopt a three-step empirical procedure to identify financial contagion. In step 1, we estimate the term premia of long-term government bonds through a linear excess return regression (thus removing monetary policy expectations). In addition to the standard term structure factors, namely first five principal components, an “unspanned global factor” related to the level of global yields is found to help forecast excess returns for all countries. The extended model is used to calculate estimated term premia for all countries, whose individual time-series and regional averages are shown in Graph 1.

Term premia: all regions

Graph 1



In step 2, we filter out the influence of domestic monetary policy and macroeconomic fundamentals from the estimated term premia. This is done by (i) regressing each factor in the excess return model on a set of controls related to monetary policy and fundamentals, (ii) recovering the residuals, and (iii) recomputing “restricted” term premia by substituting the residuals into the previously estimated excess return model. The restricted or “cleansed” term premia are now free from the

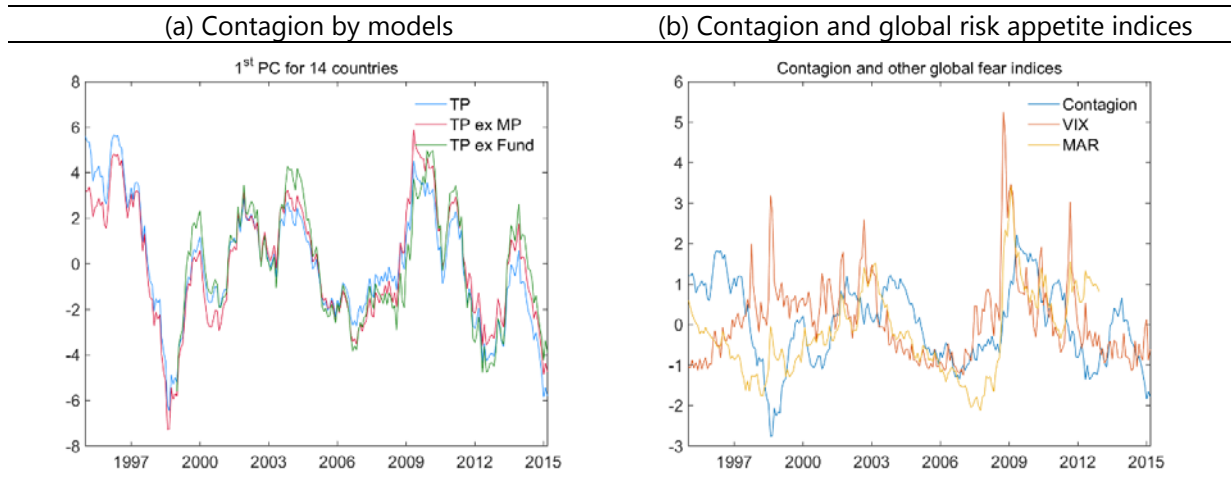
influence of domestic variables but are still subject to external spillovers or contagion effects. Two sets of controls are considered separately, namely a monetary policy variable (one-year bond yield) and a broader set of fundamentals (one-year bond yield and consensus forecasts of GDP growth as well as inflation 12-months ahead).

In the final step, we recover the global financial contagion index as the common component of term premia. For comparison, we calculate the contagion index separately for each of the three models of term premia, (i) original term premia, (ii) restricted term premia cleansed of monetary policy, and (iii) restricted term premia cleansed of fundamentals. The global financial contagion indices are common factors positively correlated with the underlying term premia, so that a higher financial contagion index suggests higher term premia on average, and vice versa.

The global financial contagion indices are quite robust to the choice of models. As Graph 2 (left-hand panel) shows, the three versions produce very similar contagion series. The result supports the notion that the core common driver of international term premia is not due to correlated fundamentals and may be more related to financial contagion.

Global financial contagion indices

Graph 2



In Graph 2 (right-hand panel), we plot our contagion index (using the model that controls for monetary policy) against the VIX and the global common factor in Miranda-Agrippino and Rey (2014) (MAR index, in short), which is calculated from a broad range of risky asset returns. The correlation between our contagion index and the MAR index is 0.38, suggesting some relations between the global driver of the bond term premia and global risk appetite. But one could argue that this is not a strong correlation. On the other hand, our contagion factor is almost uncorrelated with the VIX (correlation = 0.01). Our index therefore seems to contain additional information about the nature of financial spillovers not captured by other measures. In particular, since government bonds are under greater influence from monetary policy compared to other risky assets, our global financial contagion index may be a more relevant metric to gauge policy traction in the context of financial globalisation.

3.2 Reassessing the implications of global financial contagion

Armed with this new estimate of financial contagion, we can now reassess various issues regarding financial contagion. How much policy traction do countries have? Or equivalently, how sensitive are economies to swings in the financial contagion factor? How to compare/contrast our results with a high correlation in long-term yields? Has financial contagion become stronger in recent years, because of extraordinary monetary policies in advanced economies? How do term premia move with exchange rate changes? We now take up these questions in turn.

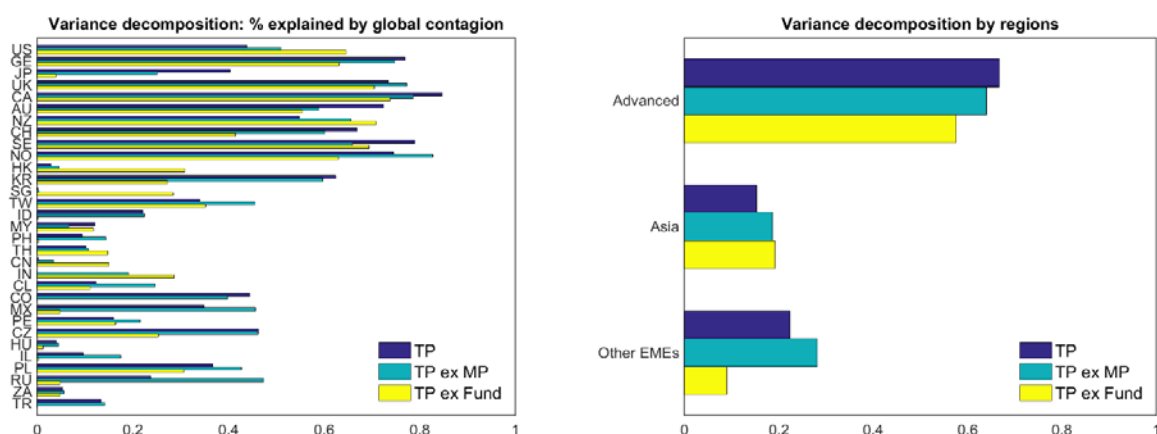
The sensitivity to contagion can be measured as the proportion of term premium variation that can be explained by financial contagion. This variance decomposition is shown in Graph 3 in detailed country breakdown, and in terms of regional averages. There is a striking differentiation across regions. In particular, the sensitivity to contagion is notably higher for advanced countries than emerging markets. Without step-2 conditioning, the contagion factor explains nearly 70% of variations in advanced economies' term premia on average, but only 15% and 22% in emerging Asia and other emerging market economies respectively. The order of magnitude is relatively robust to filtering out monetary policy and macro fundamentals. The inter-regional differences remain large whichever model is considered.

Variation of term premia explained by global contagion

Graph 3

(a) By country

(b) Regional averages



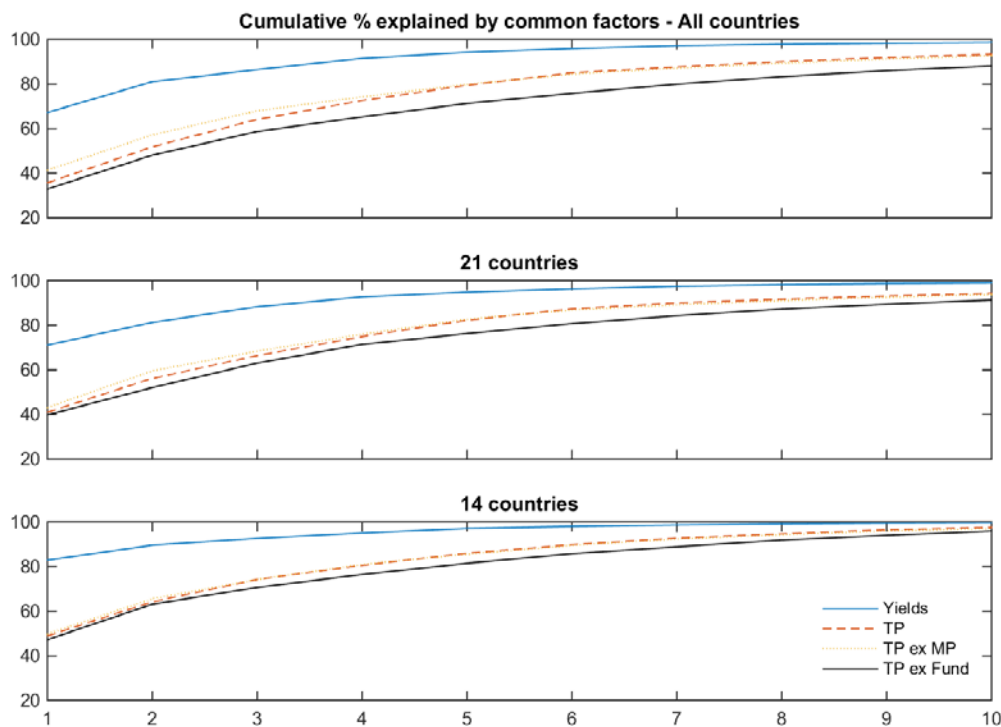
Note that this does *not* imply that emerging markets are subject to fewer external shocks, simply that these shocks are more idiosyncratic. Part of this may be due to greater liquidity shocks, given the less developed state of bond markets in these countries. Moreover, even as emerging markets are less subject to common shocks, the types of external shock that they face may pose more challenges for policy. Another possible explanation for greater susceptibility to common movements in term premia among advanced economies is the generally higher degree of financial openness and integration in these countries.⁶

⁶ In principle, greater financial integration can entail both costs and benefits, the latter of which include higher growth and better international risk-sharing. See Rungcharoenkitkul (2012) for a discussion of the trade-off and a measure of risk-sharing in the context of an affine term structure models.

High correlation in long-term yields is often associated with strong contagion (see Turner (2014) for example). The degree of such correlation can be seen in Graph 4, which plots cumulative percentage of cross-country variations in 10-year yields that can be explained by their principal components. The first factor alone can account for 70–80% of the total yield variations, depending on the set of countries included. Adding the second principal component lifts the percentage explained to 80–90%. It is tempting to conclude from this that financial contagion is the dominant single driver of international long-term yields.

Percentage of term premium variations explained by principal components

Graph 4



Note: Graph shows the percentage variations in 10-year yields and three definitions of term premia as a function of the top n principal components used, where n is on the horizontal axis.

Our results help quantify how misleading a high correlation of yields is. In Graph 4, we also plot the variations in the three versions of term premia that can be explained by their common factors. The first principal component, namely our global contagion factor, explains only 30–50% of the total variations in term premia. To explain 80% of all term premia variations, five or more principal components are required. The relevance of a single contagion factor in driving term premia is thus much weaker than suggested by yield correlation. Once fundamentals are accounted for, the influence of contagion weakens even further.

Conclusion

Has monetary policy lost traction in an era of increased financial globalisation? Our short answer is no. Central banks, by and large, do retain substantial influence over local financial conditions. In addition to their impact on the path of expected short rates, monetary policy appears to also have a significant influence on term premia. This conclusion does not preclude the possibility that the degree of *monetary dependence* may be large. Increased economic and financial linkages across economies do imply greater co-movement in asset prices and more rapid transmission of shocks. But a sizeable component of such co-movements reflects common fundamentals. We have argued that stripping these out yields a measure of spillovers that is more relevant for the assessment of how policy trade-offs are affected. At the end of the day, though, what matters is how financial globalisation has altered such trade-offs, and hence, the set of attainable outcomes. Going forward, research is needed that focuses directly on the link between financial globalisation and outcomes of goal variables such as inflation, output and financial stability. This will provide a basis for evaluating the appropriateness of policy regimes and to investigate possible adjustments.

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